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Claims

1. A method for joining a blood conduit having a lumen, distal region, and proximal region, to a blood vessel having a wall, in a patient, the method comprising:
  - 5 making an incision in the blood vessel wall;  
inserting a tubular member having a distal region and a proximal region into the conduit;  
advancing the tubular member distal region into the blood vessel through the incision; and
  - 10 fixedly joining the conduit distal region to the vessel wall near the incision while providing an oxygenated liquid flow through the tubular member disposed within the conduit and into the blood vessel.
2. The method of claim 1, in which the inserting is performed before the  
15 advancing.
3. The method of claim 1, in which the inserting is performed after the advancing.
- 20 4. The method of claim 1, in which the fixedly joining includes suturing the conduit to the blood vessel.

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5. The method of claim 1, in which the blood vessel is a coronary artery, the conduit is a saphenous vein, and in which the fixedly joining includes fixedly joining the saphenous vein to the coronary artery.
- 5 6. The method of claim 1, in which the blood vessel is a coronary artery, the conduit is an internal mammary artery, and in which the fixedly joining includes fixedly joining the internal mammary artery to the coronary artery.
7. The method of claim 1, further comprising expanding the tubular member  
10 distal region radially outward within the blood vessel.
8. The method of claim 7, in which the tubular member distal region includes a flow restrictor and a weakened wall region proximal of the flow restrictor, wherein the expanding includes forcing the oxygenated fluid under pressure  
15 through the tubular member to expanded the weakened distal region.
9. The method of claim 1, in which the oxygenated fluid includes blood.
10. The method of claim 1, in which the oxygenated fluid includes a non-blood  
20 oxygenated carrying substance.
11. The method of claim 1, in which the oxygenated fluid includes blood supplied from the patient's femoral artery.

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12. The method of claim 1, in which the oxygenated fluid includes blood supplied from the patient's aorta.
13. The method of claim 1, further comprising retracting the tubular member within the conduit and further providing the oxygenated fluid through the tubular member to the conduit proximal region.
14. The method of claim 1, wherein the patient has a blood pressure, wherein the oxygenated fluid is provided at a pressure higher than the patient's blood pressure.
15. The method of claim 14, in which the oxygenated fluid pressure is provided by a spring loaded pressure limited syringe.
16. The method of claim 14, in which the oxygenated fluid pressure is provided by a bulb.
17. The method of claim 16, in which the fluid pressure is provided through a port into the tubular member that is distinct from the proximal end.
18. The method of claim 1, further comprising inserting a stiffening member within the tubular member prior to inserting the tubular membership into the conduit.

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19. The method of claim 1, further comprising inserting a stiffening member into the tubular member.

20. The method of claim 19, wherein the advancing the tubular member into the blood vessel is performed while the stiffening member is inside the tubular member.

21. A device for providing perfusing blood during an anastomosis, the device comprising:

10 an elongate tube having a proximal end, a distal region, a distal end, an outside diameter, and a length;

wherein the outside diameter is less than about two millimeters, wherein the length is less than about 25 centimeters, wherein the distal region has a flow restrictor, wherein the distal region has a weakened tube wall proximal to the flow restrictor relative to the remainder of the tube, such that increasing fluid flow through the tube causes the weakened wall portion to increase in outer diameter.

22. The device of claim 21, wherein the tube has an outer surface and the outer surface has an anti-thrombogenic coating.

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23. The device of claim 21, wherein the tube has an outer surface and wherein the outer surface includes an anti-thrombogenic coating.

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24. The device of claim 21, wherein the tube has an outer surface and the outer surface has an heparin-containing coating.

25. The device of claim 21, wherein the tube has an outer surface and  
5 wherein the outer surface includes an heparin-containing coating.

26. The device of claim 21, wherein the tube distal region is radially reversibly expandable.

10 27. The device of claim 21, further comprising a mechanically pressurized blood source coupled to the elongate tube proximal end.

28. A device for providing perfusing blood during an anastomosis, the device comprising:

15 an elongate tube having a proximal end, a distal region, a distal end, an outside diameter, and a length;

wherein the outside diameter is less than about two millimeters, wherein the length is less than about 25 centimeters, wherein the distal region includes means for increasing the outer diameter of the distal region.

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29. The device of claim 28, wherein the means for increasing the distal region outer diameter includes means for reversibly increasing the distal region outer diameter.

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30. The device of claim 29, wherein the means for increasing the distal region outer diameter is controllable from the elongate tube proximal end.

31. The device of claim 30, further comprising means for inhibiting blood  
5 clotting on the elongate tube.

32. A method for joining a blood conduit having a lumen, a distal region, and a proximal region, to a blood vessel having a lumen, a proximal end, and a wall, in a patient, the method comprising:

10 inserting a tubular member having a distal region and a proximal region into the conduit;

advancing the tubular member distal region into the blood vessel lumen through the blood vessel proximal end; and

15 fixedly joining the conduit distal region to the vessel wall near the blood vessel proximal end while providing an oxygenated liquid flow through the tubular member disposed within the conduit and into the blood vessel.

33. The method of claim 32, in which the inserting is performed before the advancing.

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34. The method of claim 32, in which the inserting is performed after the advancing.

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35. The method of claim 32, in which the fixedly joining includes suturing the conduit to the blood vessel.

36. The method of claim 32, in which the blood vessel is a coronary artery, the  
5 conduit is a saphenous vein, and in which the fixedly joining includes fixedly joining the saphenous vein to the coronary artery.

37. The method of claim 32, in which the blood vessel is a coronary artery, the  
conduit is an internal mammary artery, and in which the fixedly joining includes  
10 fixedly joining the internal mammary artery to the coronary artery.

38. The method of claim 32, further comprising expanding the tubular member distal region radially outward within the blood vessel.

15 39. The method of claim 38, in which the tubular member distal region includes a flow restrictor and a weakened wall region proximal of the flow restrictor, wherein the expanding includes forcing the oxygenated fluid under pressure through the tubular member to expanded the weakened distal region.

20 40. The method of claim 32, in which the oxygenated fluid includes blood supplied from the patient's femoral artery.

41. The method of claim 32, in which the oxygenated fluid includes blood supplied from the patient's aorta.

42. The method of claim 32, wherein the patient has a blood pressure, wherein the oxygenated fluid is provided at a pressure higher than the patient's blood pressure.